

Final Review

Name:

1)

- a. Find the equation of the line that passes through (2,4) and (4, 10).
- b. Find a line that is parallel to the line in #2 that passes through (1, 5).
- c. Find a line that is perpendicular to #2 that passes through (0, -3)

2) Let $f(x)=3x^4$. Write a new function g (in terms of x) when f is shifted:

- a. Up 4
- b. To the right 2
- c. To the left 3
- d. Down 7

3) For $f(x)=x^4-2x^2+1$, determine:

- a. any local extrema
- b. any absolute extrema

4) Solve $\frac{x^2+3x+2}{x^2-16} \geq 0$ using any method.

5) Consider the rational function $y = \frac{2x-10}{x^2-x-2}$.

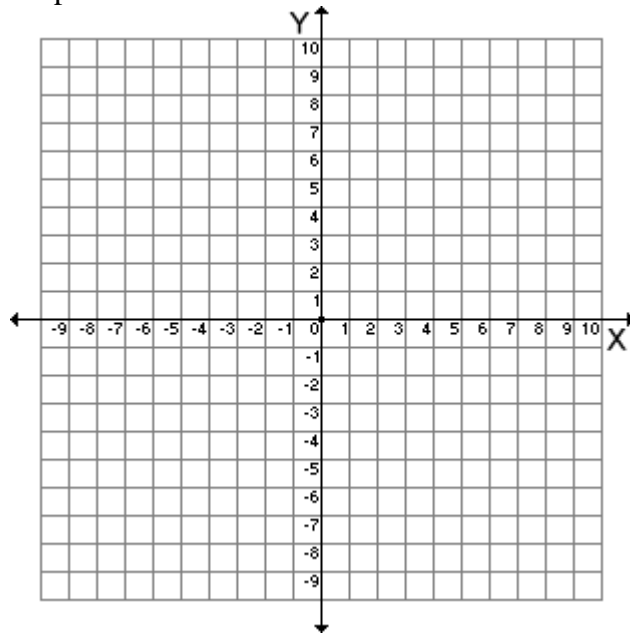
- a. State the equations of any vertical asymptotes, if there are any.
- b. Identify the equations of any horizontal asymptotes, if there are any.

Use the function shown below to complete the following.

$$f(x) = \begin{cases} |2x-1| & \text{if } x < -1 \\ x-2 & \text{if } -1 \leq x \leq 1 \\ -2|x-1| & \text{if } x > 1 \end{cases}$$

6)

a. Graph the function



b. Evaluate f at $x = -2, 0, 2,$ and 4

c. Determine the x values where $f(x)=0$

7) Use $f(x)=x^2-25$ and $g(x)=x^2-10x+16$ to find and simplify the following.

a. $(fg)(x)$

b. $(f/g)(x)$

c. $(f \circ g)(x)$

8) Determine algebraically whether $f(x) = 3x - 2$ and $g(x) = \frac{(x+2)}{3}$ are inverses of each other.

9) Solve the following:

a. $4(1.3)^x - 10 = 70$

b. $2 \log 3x + 5 = 1$

10) Find the vertex of $f(x) = -2x^2 + 2x + 3$.